



# New distribution record of *Hoya sipitangensis* Kloppenb. & Wiberg (Apocynaceae, Asclepiadoideae) from Palawan, Philippines

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## Abstract

We report *Hoya sipitangensis* Kloppenb. & Wiberg for the first time on Palawan Island, Philippines. This record extends its distribution northward from Borneo to the Philippines. Additional taxonomic information and photographs from field collections are provided.

## Keywords

Forests over limestone, Puerto Princesa Subterranean River National Park, range extension, wax plant

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## Introduction

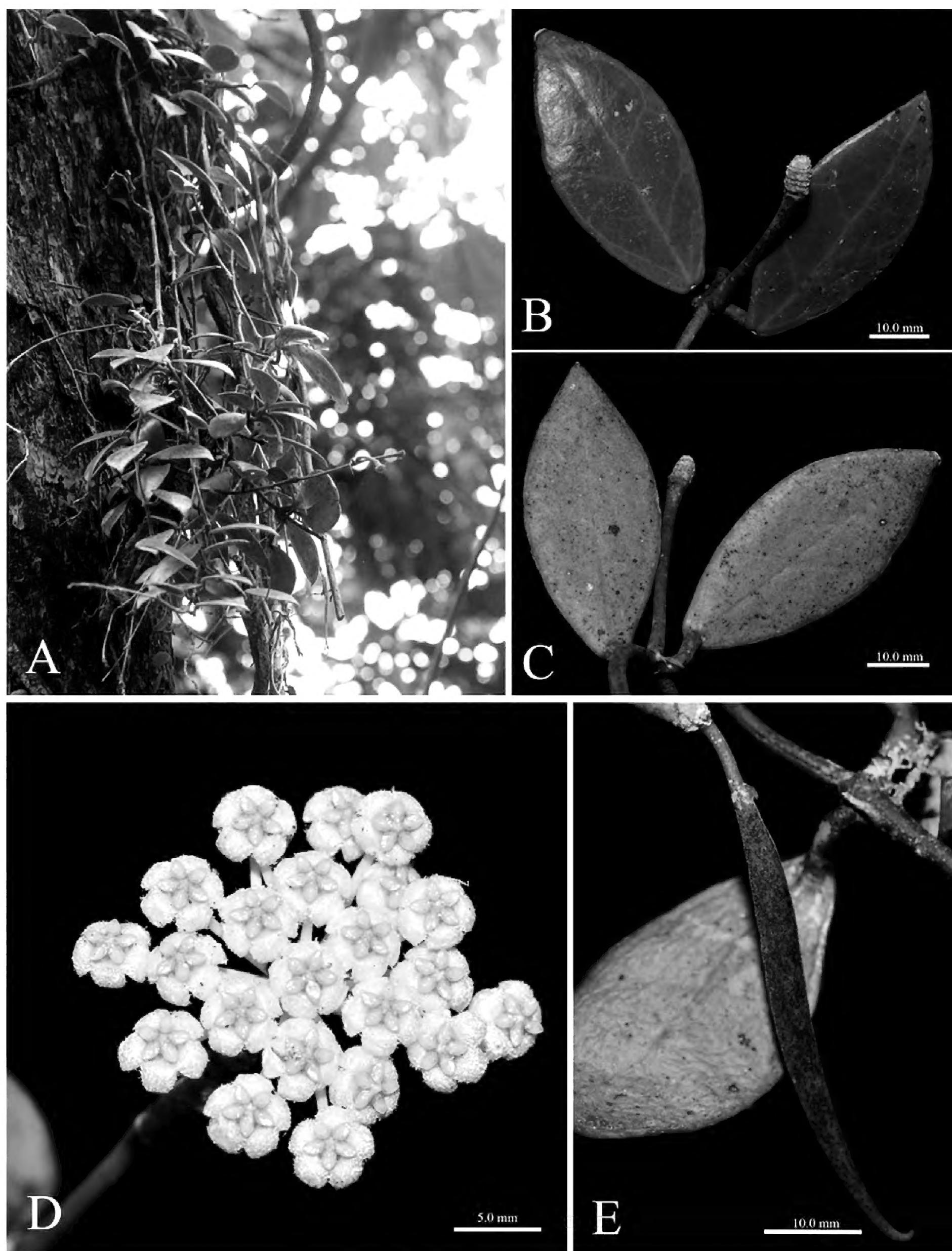
The genus *Hoya* R.Br. (Brown 1810: 459) contains 500 or more described species of mostly epiphytic flowering plants. Distinct characters of this genus include milky sap, umbelliform inflorescence, and a star-shaped corona (Kidayoo and Wai 2009). It is distributed throughout Southeast Asia, China, New Guinea, Australia, and some Pacific Islands (Hadsall et al. 2015), with the highest diversity in the Philippines, Borneo, and New Guinea (Pelser et al. 2011; Lobb and Rodda 2016; Juhonewe and Rodda 2017). In the Philippines, 202 species and 39 subspecies of *Hoya* have been reported, of which 197 are reported to be endemics (Pelser et al. 2011).

Palawan Island, Philippines, is a distinct biogeographic zone due to its historical connections with the

Greater Sunda Shelf (Van-Wright 1990). Santiago and Buot (2017) noted 17 species of *Hoya* from Palawan Island, four of which are island endemics and two are shared with the Sunda shelf. The low endemicity record of Palawan compared to the overall high rate of Philippine *Hoya* endemicity may be attributed to a dearth in data as a result of scarce botanical expeditions focusing on this genus on Palawan. in the province.

## Methods

During a recent expedition to Puerto Princesa, Palawan, a small *Hoya* population was observed hanging among branches of trees in a lowland forest. The specimens



**Figure 1.** *Hoya sipitangensis* Kloppenborg & Wiberg. **A.** Growth habit. **B.** Leaf (adaxial view). **C.** Leaf (abaxial view). **D.** Inflorescence. **E.** Fruit. (Photo credits: RAA Bustamante (A); CC Lucanas (B, C) MD delos Angeles (D, E).

were collected using the Gratuitous Permit (2021-02) issued by the Palawan Council for Sustainable Development (PCSD) and Protected Area Management Board (PAMB) of Puerto Princesa. Several plant samples were preserved in 95% ethyl alcohol, then dried and mounted

on herbarium sheets. Measurements were made using digital calipers, and ImageJ. Multiple images of dissected parts were photographed using a Nikon D3100 camera and were focus stacked using CombineZM. Distribution maps were generated using Natural Earth Data in QGIS

v. 2.18.0 (QGIS Development Team 2009).

The specimens were compared with original descriptions of *H. sipayensis* Kloppenb. & Wiberg and *H. yapiana* Kloppenb from UC herbaria (the acronym follow Thiers 2021). The voucher specimen was deposited at the Botanical Herbarium (CAHUP), University of the Philippines Los Baños Museum of Natural History. The description below of this species is based on the collected Philippine materials.

## Results

### *Hoya sipayensis* Kloppenb. & Wiberg

Fraterna 15(3): 4. 2002 (Kloppenburg and Wiberg 2002). Sipitang, Sarawak, Borneo (neotype UC [UC1784973]).

**New record.** PHILIPPINES – Palawan Island • Puerto Princesa, Brgy. Cabayugan, foot of St. Paul's; 10°09' 21"N, 118°53'04"E; 10 m a.s.l.; 24 Feb. 2021; MDDelos Angeles & RABustamante leg.; Epiphytic flora found on a tree near an agricultural field; CAHUP 074067 (Figs. 1, 2).

**Additional specimens examined.** BRUNEI • originally from Belait, Seria, Tutong District and cultivated in Singapore; 21 Jan. 2008. (holotype SING 0124341; isotype BRUN n.v., K [K000898014]).

**Identification.** A small climbing epiphyte. Stem slender, up to 2.39 mm in diameter, yellow-green, glabrous. Leaves: petiole round and glabrous, up to 6.62 mm long; blade ovate to elliptic, 69.5 long, 31.08 mm wide and 0.85 mm thick, apex acute, base round to cuneate; midrib and venations obscure. Inflorescence: axillary, positively geotropic, 20–28-flowered, flowers with sweet scent; peduncle 29.77 mm long, glabrous, rachis 23 mm long. Pedicels vary in length, 7.16–11.02 mm long, glabrous. Corolla round, 3.56 mm in diameter, revolute, creamy white on the outer surface, pink towards the inner surface, minutely pubescent. Corona 1.6 mm in diameter; inner lobes pink to carmine; center yellow; outer lobes long and acuminate, translucent. Pollinarium: pollinia 0.25 mm long. Fruit: follicle 51.23 mm long, borne on a stalk 6.73 mm long.

## Discussion

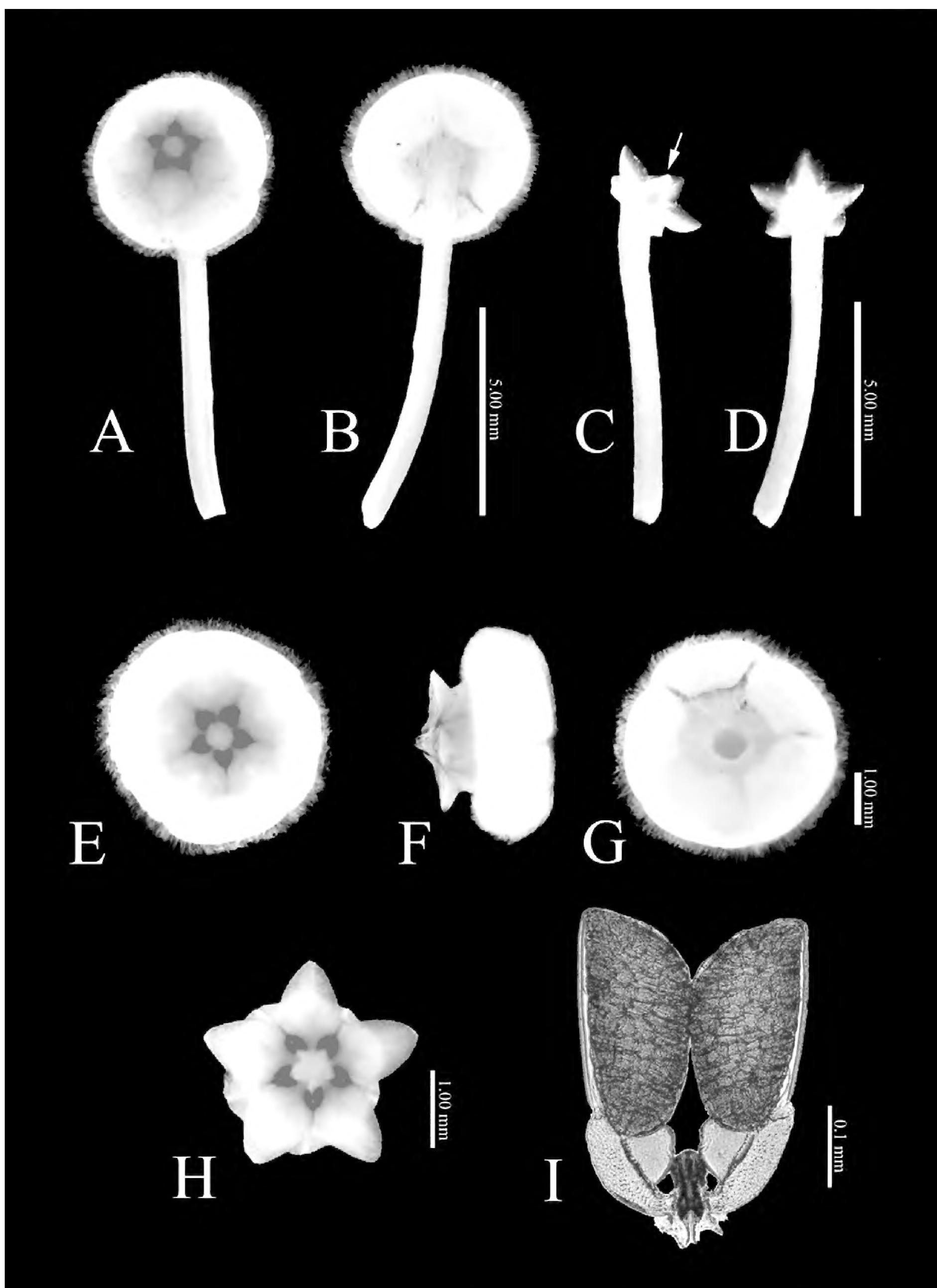
On account of its revolute corolla lobes, boat-shaped corona scales with two tooth-like projections below, and the presence of an unsulcated pentamerous skirt (annulus) beneath the corona scales, *Hoya sipayensis* is placed in the section *Otostemma* Blume (Kloppenburg 1990). It can be differentiated from *H. obscura* Elmer ex C.M.Burton and *H. lacunosa* Blume on the basis of its larger leaves and flowers where the corolla is pubescent and not velvety-villous (Kloppenburg and Wiberg 2002). The inflorescence of *H. sipayensis* has a sweet scent reminiscent of *H. lacunosa*. According to Kloppenburg and Siar (2010), *H. sipayensis* is also similar

**Table 1.** Comparisons of *Hoya sipayensis* Kloppenb. & Wiberg from three localities.

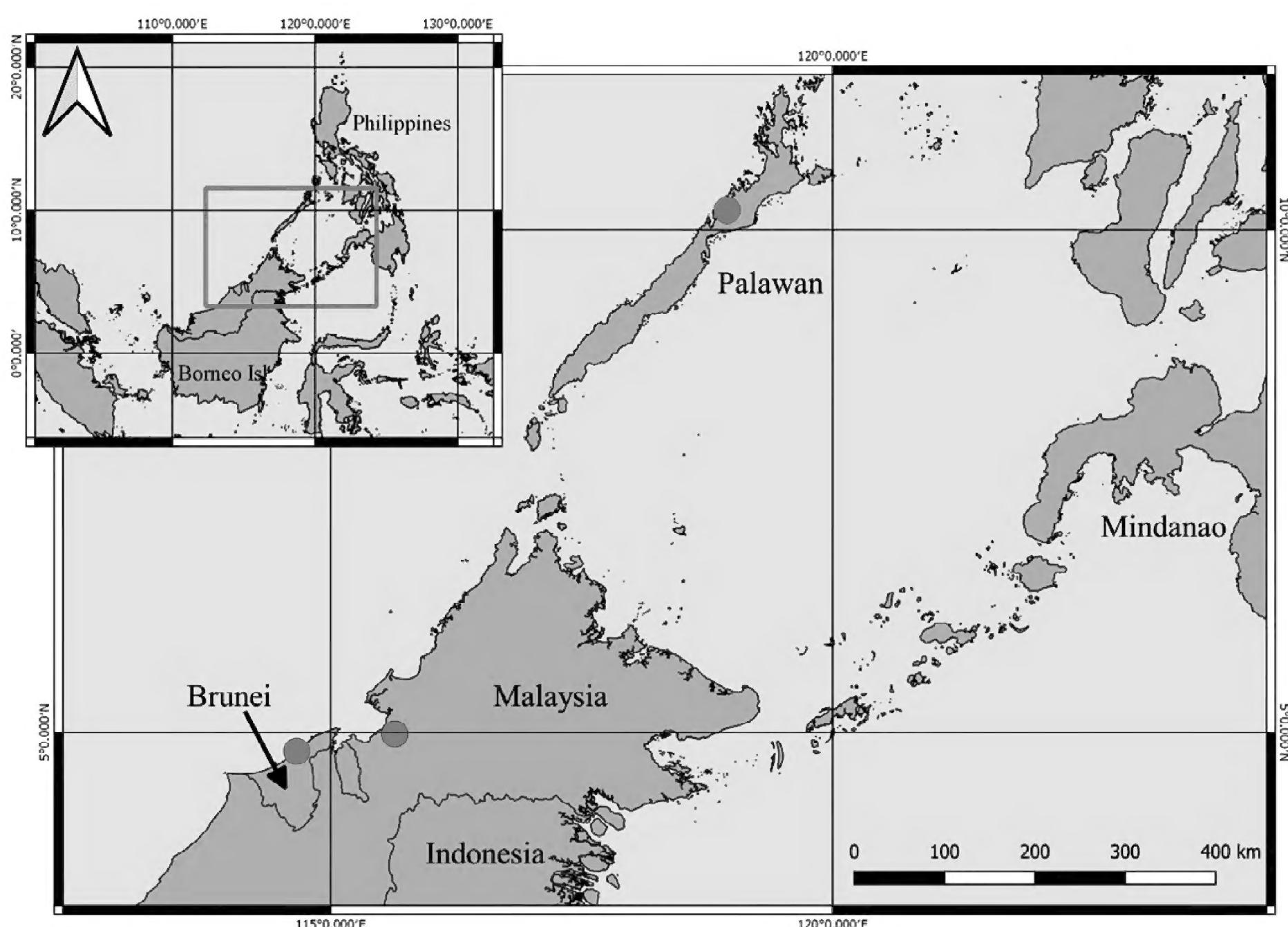
Characters (in mm)	<i>H. sipayensis</i> (Puerto Princesa, Philippines)	<i>H. sipayensis</i> (Sipitang, Borneo)	<i>H. sipayensis</i> (= <i>H. yapianum</i> ; Brunei)
Pedicel			
Length	4.0	8.0	15
Diameter	1	0.9	10
Sepal			
Length	0.736	0.8	0.8
Diameter	0.708	2.6	0.8
Ovaries			
Length	0.7	—	—
Corolla			
Diameter flattened	7.065	12.4	5.1
Center to apex	3.462	6.2	—
Apex-sinus	1.735	4	—
Sinus-center	2.11	2.5	—
Sinus-sinus	2.485	3.3	—
Corona			
Apex to apex	1.783	2.3	—
Apex-center	1.12	2.6	—
Widest	0.7	1.1	0.7
Pollinia			
Length	0.289	0.36	0.25
Width	0.137	0.09	0.12
Retinaculum			
Length	0.073	0.06	0.06
Head	0.006	—	—
Shoulders	0.031	0.04	—
Waist	0.012	0.02	—
Hips	0.034	0.05	—
Extensions	0.036	0.04	0.04
Translator			
Length	0.145	0.13	0.10
Width	0.040	0.01	0.04
Caudical			
Length	0.045	0.04	—

in appearance to *H. yapianum* Kloppenb. & Siar, but the latter differs in the apex of its sepals which: “are obtuse and not acute; the pedicels are glabrous, not puberulent; the inner apex of the corona is acute, not spathulate; the foliage is larger and the pollinia are about  $\frac{1}{3}$  shorter” Kloppenburg and Siar, (2010: 328). However, Rodda (2016) considered *H. yapianum* a synonym of *H. sipayensis* on the basis that the differences are part of the natural variation of the latter. The dimension of individual plants of *H. sipayensis* that we found on Palawan are notably smaller compared to the type description by Kloppenburg and Wiberg (2002) (Table 1).

*Hoya sipayensis*, and its synonym *H. yapianum*, have only been previously reported from their type localities, Sipitang, Sabah, Borneo and Seria, Belait, Brunei, respectively. It has been found on coastal to lowland forests at 300 m a.s.l. Here, we report it as a component of the epiphytic flora in a lowland forest in Puerto Princesa, Palawan (Fig. 3). Several clusters of *H. sipayensis* were spotted hanging among branches of three Lythraceae tree species. The host tree species forms dense canopies creating shady and moist understories. This



**Figure 2.** *Hoya sipayangensis* Kloppenborg & Wiberg. **A, B.** Floret: (A) dorsal view; (B) ventral view. **C, D.** Pedicel and calyx: (C) lateral view ovary (with arrow), (D) ventral view. **E–H.** Corona: (E) dorsal; (F) lateral; (G) ventral; (H) dorsal. **I.** Pollinarium.



**Figure 3.** Distribution of *Hoya sipayangensis* Kloppenborg & Wiberg. Blue circle = known reports (data after Lobb and Rodda 2016); red circle = new record in the Philippines.

supports the previous observations on the influence of Bornean biogeography on Palawan Island (Heaney 1985; Wikramanayake et al. 2002; Atkins and Cronk 2001).

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## Author Contributions

Conceptualization: MDDA. Formal Analysis: MDDA and CCL. Project Administration: MDDA. Writing – original draft: MDDA. Data curation: MDDA and CCL. Methodology: MDDA. Software: MDDA and CCL. Validation: MDDA and CCL. Writing-review and editing: MDDA, CCL, and ASH.

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